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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,237	07/02/2003	Norman Herron	UC0213 US NA	4857

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WILMINGTON, DE 19805

EXAMINER

SADULA, JENNIFER R

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 05/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/612,237

Applicant(s)

HERRON ET AL.

Examiner

Jennifer R. Sadula

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 5-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.


**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f):
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/11/03; 3/29/04</u> . | 6) <input type="checkbox"/> Other: _____  |

TS 

## DETAILED ACTION

### *Election/Restrictions*

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-4, drawn to the side-chain compounds of formula 1(a), classified in class 532, subclass 1. Examiner notes that claim 18 could potentially be within this group however it depends upon what species is elected by the invention of claim 18.
- II. Claims 5-9, 22-26, drawn to the side chain phenanthroline compounds of figure 2, classified in class 546, subclass 88.
- III. Claims 10-14, 27-31 and 36-37, drawn to the sidechain quinoxaline monomers of figure 3, classified in class 544, subclass 353.
- IV. Claims 15-16 and 32-33, drawn to a copolymer of compounds wherein one monomer is selected from those of figure 1 (two of which are compounds yet to be noted in the above specified inventions- and the 6 different noted embodiments of claim 16), classified in class 520, subclass 1.
- V. Claims 17 and 34, drawn to the benzo carbazole as specified in formula IV(f), classified in class 548, subclass 420.
- VI. Claims 18-21 and 35, drawn to the compounds of figure 1 which may or may not be included in the invention I listed above, classified in class 548, subclass 428 or class 532 subclass 1 (depending on which invention is elected).

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Examiner notes claims 38 and 39 are generic to inventions II and VI and therefore whichever of these two groups is chosen must include the multiple dependent claims 38 and 39. The inventions are distinct, each from the other because of the following reasons:

Inventions I, II, III, IV, V and VI are all related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because each of the inventive concepts lacks the special technical feature of the other inventive concepts. Examiner once again notes that the compounds of invention VI may end up capable of inclusion with invention I however this is yet to be determined by the Applicants election of species. The subcombinations each have a separate utility such as electro optical materials, decorative display materials, magneto-optical materials. Essentially, this application claims a multitude of extremely diverse compounds which would not be utilized together and thus the restriction requirement is proper.

Because these inventions are distinct for the reasons given above and the search required for any one group is not required for another, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

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Claims of invention I and IV are generic to a plurality of disclosed patentably distinct species. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species, even though this requirement is traversed.

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

During a telephone conversation with Mary Ann Capria on 26 April 2005 a provisional election was made without traverse to prosecute the invention of group I, claims 1-4. Affirmation of this election must be made by applicant in replying to this Office action. Claims 5-39 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Information Disclosure Statement***

The IDS's submitted 12/11/03 and 3/29/04 have both been considered however examiner notes that the first four references of the 3/29/04 IDS are duplicate submissions of the 12/11/03 IDS and thus have not been duplicatively considered.

***Claim Objections***

Claims 1-4 objected to because of the following informalities: Applicant is advised to add the compound of figure 1A to the claim language to avoid complications. Appropriate correction is required. Examiner further notes that there are no examples utilizing a compound of this formula as the additional carbon atom is not exemplified in the chain. Lastly, Examiner notes that the carbon is missing a bond and therefore has been interpreted as CH.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

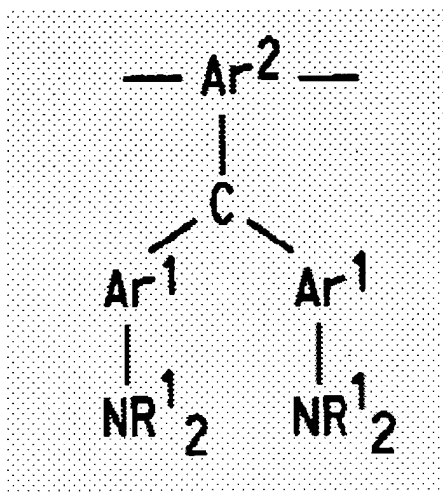
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2 and 4 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Lee et al., U.S. Patent Publication No. 2003/0197158 ("Lee").

Applicants claim the compound of figure 1A:

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Lee teaches hole-carryable polymers for use in NLOs and as photo-refractive materials wherein the compounds satisfy formula 1 wherein A is a chromophore such as formula 3 which satisfies Applicants claimed compound (see also paragraph 0074 wherein the carbazole is taught with a singular CH<sub>2</sub> group).

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, as applied above, in view of Valentine Jr. et al., U.S. Patent No. 6,344,505 ("Valentine").

Lee teaches the compound substantially as claimed however fails to teach the use of two separate Ar-NR<sub>2</sub> groups on the carbon atom.

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Valentine teaches mono and bis-benzotriazolyldihydroxybiaryl UV absorbers wherein alternately, the benzotriazoles of the invention may also be bonded to polymers by reaction with an oligomer and/or polymer which carries suitable functional groups. For example, at least one benzotriazole compound of the present invention can be added, optionally to unsaturated polyester resins, unsaturated polybutadiene oligomers or unsaturated rubbers and then cured by actinic radiation or by a free radical catalyst. Or, at least one benzotriazole compound of the present invention may be reacted with a polymer and/or oligomer such as polyesters, polyurethanes and polydiols with reactive end-groups, partially hydrolyzed polyvinylacetate, epoxy resins, polysiloxanes and polymers comprising maleic anhydride, either in the main chain or as a side-chain, by methods well known to those in the art (19:54-67).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to add a side-chain of Valentine to the optically active compounds of Lee as such would have a reasonable expectation of success for increasing the UV absorbing characteristics of the compound.

Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, as applied above, in view of Usuki et al., U.S. Patent No. 6,740,407 ("Usuki").

Lee teaches the compound substantially as claimed however fails to teach the use of two separate Ar-NR<sub>2</sub> groups on the carbon atom.

Usuki teaches magnetic recording media utilizing optically active side-chain polymers wherein the materials are taught As the rust-preventive agent to be used in the present invention, nitrogen-containing heterocyclic compounds such as benzotriazole, benzimidazole,



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purine, pyrimidine, etc., derivatives prepared by introducing alkyl side-chain to or the base nucleus, nitrogen- or sulfur-containing hetero-cyclic compounds and derivatives such as benzothiazole, 2-mercaptobenzothiazole, tetrazaindene cyclic compound, thiouracil compound may be used.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to add a side-chain of Usuki to the optically active compounds of Lee as such would have a reasonable expectation of success for increasing the UV absorbing characteristics of the compound.

### ***Conclusion***

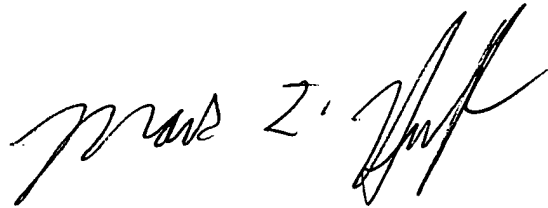
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chao et al (NPL (2001) teaches that the side chain molecules as specified would occur with a great deal of steric hinderance. Zhao et al (NPL (1995) teaches an additional carboxylic group in the side chain.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer R. Sadula whose telephone number is 571.272.1391. The examiner can normally be reached on Monday through Friday, 10am-6pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F. Huff can be reached on 571.272.1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Mark F. Huff", is written over the typed name and title.

JRS  
4/28/05

**MARK F. HUFF  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700**